Determination of Tannin Content in Banana (Musa spp) Midribs: a Comparative Study

James K Wangui[a], Douglas Onyancha[a] and Benson Ongarora[a]

[a]School of Science, Dedan Kimathi University of Technology, Private Bag, Nyeri, 7381, Kenya, E-mail: james.wangui21@students.dkut.ac.ke

Abstract

Ecological concerns emanating from the use of inorganic tanning agents in leather processing have been on the rise, leading to increased research on alternative tanning agents. This study aimed at determining the tannin content in two banana leaf midrib samples and their tanning strengths. Soxhlet method was used to extract the tannins from the banana leaf midrib samples. Different solvents were investigated in order to determine the best candidate for the extraction of tannins. Chemical tests were used to determine the nature of tannins present in the selected banana species. Hide powder method made it possible to quantify the tannins present and their tanning strength. The extracted samples were further analyzed using FTIR to establish the functional groups present. Highest tannins yields were obtained using distilled water as solvent at 14.51 ± 0.17% and 7.14 ± 0.15% for sweet banana species (*Musa sapentium Linn.*) and 'Muraru' (AA genome) midribs respectively. *Musa sapentium Linn.* and 'Muraru' (AA genome) midrib tannins had tannin content of 11.71 ± 0.33% and 6.36 ± 0.19% respectively from the hide powder method. Both species had a tanning strength greater

than the recommended minimum value of 1.5. However, the data from the study showed that only sweet banana leaf midrib tannins can be commercially viable in leather tanning since they have a tannin content above the required minimum value (>10%).

Keywords: banana, banana leaf midrib, mimosa , *Musa sapentium linn*, muraru(AA genome).